DOCUMENT RESUME

ED 127 445 95 CE 007 609

AUTHOR Leigh, Duane E.
TITLE The Effect of Job Experience on Earnings Among Middle-Aged Men. Institute for Research on Poverty Discussion Papers.
INSTITUTION Wisconsin Univ., Madison. Inst. for Research on Poverty.
SPONS AGENCY Department of Health, Education, and Welfare, Washington, D.C.; Employment and Training Administration (DOL), Washington, D.C.
REPORT NO IRP-DP-318-75
PUB DATE Oct 75
NOTE 28p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Age; Career Change; Caucasians; Economic Research; Educational Background; *Educational Experience; *Employment Experience; Job Skills; Job Training; Labor Economics; *Males; Mathematical Models; *Middle Aged; Negro Employment; Negroes; Occupational Mobility; Occupational Surveys; Occupations; Racial Differences; Vocational Education; *Wages; Work Experience

ABSTRACT

The primary purpose of this paper is to improve on the specification of job experience as measured by current age, minus age at completion of formal schooling. The process of acquiring productive job skills was modeled by first focusing on the determination of the level of first-job occupation and then, given initial occupation, examining the determinants of occupational advancement. The impact of initial occupational level and occupational change on current (1966) wage rates were then examined. In the empirical analysis, separate equations for middle-aged black and white men were estimated to focus on racial differences in the acquisition of labor market experience. The primary finding is that it is work experience accompanied by occupational advancement, rather than work experience per se, that has an effect on the distribution of wage rates. (Author/HD)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED127445

THE EFFECT OF JOB EXPERIENCE ON EARNINGS AMONG MIDDLE-AGED MEN

Duane E. Leigh

October 1975

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

The research described in this paper was partially supported by a grant from the Manpower Administration of the U.S. Department of Labor under the Manpower Development and Training Act of 1962, as amended, and by funds granted to the Institute for Research on Poverty at the University of Wisconsin-Madison by the Department of Health, Education, and Welfare, pursuant to the Economic Opportunity Act of 1964. The opinions expressed are solely those of the author.

CE 007 605

ABSTRACT

The purpose of this paper is to improve on the specification of job experience as measured by current age minus age at completion of schooling. Using work history information for middle-aged men, a model is investigated that focuses on the determination of first-job occupation, occupational change between first job and current job, and current wage rate. The primary finding is that it is work experience accompanied by occupational advancement rather than work experience per se that has an effect on the distribution of wage rates.

THE EFFECT OF JOB EXPERIENCE ON EARNINGS
AMONG MIDDLE-AGED MEN

I. Introduction

In his recent book, Schooling, Experience, and Earnings,[1] Jacob Mincer focuses on the importance of post-school investments in human capital as primary factors explaining observed differences in earnings. Like any other investment activity, post-school investments are specified to bear a positive cost and yield a positive return. The costs of post-school investments are measured by the difference between "gross" and "net" earnings, where gross earnings are earnings capacity based on years of schooling, and net earnings and observed earnings are synonymous. The returns to post-school investments take the form of augmented skills. Thus Mincer contends that it is accumulated work experience rather than age per se that accounts for earnings variation within schooling groups. Using a large sample of white, nonfarm males, he reports that years of schooling explain only 7 percent of the variation in 1959 annual earnings. However, explained variation rises to over 30 percent when the model is expanded to include work experience as well as schooling.[2]

This paper attempts to extend Mincer's empirical analysis in two directions. First, longitudinal panel data are exploited to provide an improved specification of the post-school investment variable. Mincer's measure is simply reported age minus average age at completion of schooling. As a proxy for post-school investments, years of work experience suffer from at least the following two

defects: (1) work experience fails to represent the variety of post-school investments that are commonly available, and (2) the variable does not capture the volume of investment taking place per unit of time spent working.[3] With respect to the latter problem, the approach taken here is that productivity-augmenting work experience can be measured indirectly by observed mobility up a job hierarchy. Using occupational advancement to measure job progression, the analysis focuses on the process of occupational mobility during the working lifetime and on the impact of this mobility on earnings.

The second direction taken in the paper is an extension of Mincer's analysis to an examination of the work experience of black as well as white men. The primary question considered is the extent to which racial differences in accumulated job experience contribute to the explanation of black-white earnings differentials. To this end, the empirical work utilizes a large sample of black and white men. The sample includes only middle-aged men so that variation in age and years of work experience is quite limited relative to the variation for the male population.

II. Conceptual Framework

The model examined takes the form of three equations representing the process of acquisition of work-related skills and learning during an individual's working career. The first equation considers the impact of workers' personal characteristics on the occupation of their first job after going to school full time. In the second equation, the determinants of occupational advancement between first job and

current job are examined. Finally, a third equation is specified to determine the impact of first-job occupation and of occupational advancement on current hourly earnings. Right-hand side variables include number of years of schooling completed, two measures of individuals' backgrounds while growing up (the socioeconomic status of father's occupation and community size), and a rough proxy variable for differences in labor market conditions existing during the period in which first job was obtained. More formally, the model may be specified as follows for individual male workers:

$$(1) \quad OCC(FIRST) = f_1[ED, BACK, ENTRY, RACE]$$

$$(2) \quad \Delta OCC = f_2[OCC(FIRST), ED, BACK, ENTRY, RACE]$$

$$(3) \quad WAGE = f_3[OCC(FIRST), \Delta OCC, ED, BACK, ENTRY, RACE]$$

where ΔOCC is occupational change measured between occupation of first job, OCC(FIRST), and current occupation; WAGE is current hourly wage; ED is years of schooling completed; BACK is family and community background; and ENTRY is year of first full-time employment. ED, BACK, ENTRY, and RACE are taken to be exogenously determined; and equations (1) - (3) are treated as a recursive system representing the sequential process of finding a first job in the occupational hierarchy, rising up the hierarchy, and, as a consequence, earning a wage rate.

Since a primary purpose of the analysis is to improve on Mincer's specification of the job experience variable, the interpretation of occupational change in equation (2) of the model requires further elaboration. As Mincer outlines the problem, some measure of post-school investments in human capital is critical in explaining

differences between individuals in lifetime earnings profiles. Unfortunately, post-school "training" obtained on the jos is difficult if not impossible to measure directly.[4] Investment in on-the-job training can, however, be indirectly observed in the process of job upgrading. In an important recent paper, Sherwin Rosen demonstrates that in the process of acquiring labor market skills, workers pass through an optimal sequence of jobs each of which involves successively smaller increments of investment.[5] Using Mincer's terminology, Rosen's model suggests that each successive job yields a smaller differential between gross and net earnings until a point in the worker's career is reached at which the difference is negligible; that is, the worker's investment program is completed. Viewed in this manner, the upward mobility of a worker through the occupational structure serves as an important indicator of the volume of his productive training investment.[6]

III. The Data

The empirical implementation of the model is possible because of the availability of a rich source of data collected in the National Longitudinal Surveys (NLS) for men aged 45-59 in 1966. Particularly important for the purpose of examining the acquisition of job experience is the information concerning the first full-time job of respondents. Both first job and 1966 jobs are coded into three-digit occupational categories. So that occupational upgrading can be distinguished from downgrading and lateral movement, occupational categories, in turn, are indexed by assigning to each the 1969 median wage and salary earnings (in hundreds of dollars) of the male members of the occupation in the

experienced labor force. Median earnings scores range between 5 and 206. Using this ranking scheme, a value of ΔOCC of, say, 20 would be interpreted as indicating that the respondent moved to an occupation in 1966 in which 1969 median earnings were about $2000 higher than 1969 median earnings in the occupation of his first job after leaving school.

The particular subset of the middle-aged NLS sample examined here includes men who (1) are either black or white, (2) report both a first job and 1966 job occupational title, and (3) were working during the survey week in 1966 and reported a positive hourly wage rate. After imposing these restrictions, the available sample includes 2442 whites and 1043 blacks. Some insight into the nature of the sample may be gained from the summary statistics shown in Table 1. The first two lines of the table indicate that, on the average, white men both started higher and advanced further in the occupational structure than did black men. The model specified in the previous section hypothesizes that these differences make an important contribution to explaining the sizeable racial difference in average hourly earnings shown in the third line of the table. Yet both racial groups exhibit substantial occupational upgrading between first job and 1966, reflecting in part a broad movement of workers from farm-related occupations to relatively high-skilled white- and blue-collar occupations.[7]

The distributions of the schooling and year of first job variable depicted in Table 1 reflect the definitions of ED and ENTRY as categorical dummy variables. ED is represented by six mutually exclusive groups and ENTRY by four groups. As might be expected, whites are observed to possess substantially greater endowments of formal education than blacks.

Table 1. Mean Values of Selected Variables, by Race

Variable	Whites (N=2442)	Blacks (N=1043)
OCC(FIRST)[a]	56.3	41.9
ΔOCC[a]	23.3	16.5
WAGE[a]	3.50	2.16
ED: Less than 8 yrs.	.17	.24
8 yrs.	.18	.12
9-11 yrs.	.21	.17
12 yrs.	.25	.11
13-15 yrs.	.09	.03
16 or more yrs.	.10	.03
ENTRY: Earlier than 1930	.35	.43
1930-34	.25	.23
1935-39	.29	.23
1940 or later	.11	.11

[a]The racial difference in the means is significantly positive at the .01 level.

Since the age distribution of the sample is essentially uniform for both racial groups, black respondents tended to obtain full-time employment at an earlier age than whites. Blacks thus tend to possess more years of labor market experience using Mincer's empirical measure of post-school investment.

Of the remaining variables in equations (1) through (3), BACK is measured in two dimensions. Family background is represented by the socioeconomic status of the father's occupation, which is treated as a continuous variable. Community background is captured by the size of the community in which the respondent lived at age 15. Community size categories include rural farm and nonfarm, town (under 25,000 residents), and city (over 25,000 residents or suburb of a large city). Both father's SES and community size are expected to be positively associated with achievement in the labor market. Family background reflects the richness of the home environment which, in turn, may have an effect on available job opportunities as well as influencing length of schooling. Community size serves as a measure of the variety of available jobs in addition to having a possible effect via the quality of schooling. Finally, the effect of the variable RACE is examined by estimating separate equations for blacks and whites.

III. Results

Assuming a linear approximation of the model, each equation is estimated by ordinary least squares. Omitted categories of the categorical variables include less than eight years of schooling completed, rural residence at age 15, and first full-time job accepted between 1930 and 1934.

Occupation of first job. Coefficient estimates for equation (1) are displayed in the first two columns of Table 2. For both racial groups, a strong, positive relationship between educational attainment and initial occupational standing is indicated--even after controlling for the family and community background variables. Father's SES score is observed to be significantly related to first occupation for whites but not blacks, while the expected positive relationship is shown for both racial groups for the community size variable. Relative to first-job employment during the 1930-34 period, only acceptance of first job during the 1940s appears to have a consistent (positive) impact on first occupation.

The most notable feature of the results reported for OCC(FIRST) in Table 2 is the very similar structure of the estimates obtained for blacks and whites. In an attempt to pin down the sources of the large racial differential in first-job occupational standing therefore, the differential shown in Table 1 was decomposed into two parts: the differential attributable to racial differences in the mean values of specified characteristics, and the differential attributable to racial differences in the estimated coefficients for given characteristics.[8] Of the observed differential of 14.4 points, about 58 percent is due to the effect of different means. Nearly two-thirds of this 58 percent in turn reflects differences in endowments of formal schooling, while racial differences in the size of the community in which respondents were raised accounts for most of the remaining one-third.

The 42 percent of the observed differential attributable to racial differences in coefficients is largely due to the 2.15 point difference

Table 2. Regression Results for the Dependent Variables Occupation of First Job and Occupational Advancement (absolute t statistics in parentheses)

Independent Variable[a]	OCC(FIRST)				ΔOCC			
	Whites		Blacks		Whites		Blacks	
Constant	36.30	(22.50)	34.15	(21.75)	56.04	(36.49)	48.63	(34.43)
OCC(FIRST)					-0.86	(42.52)	-0.86	(30.19)
Schooling:								
8 yrs.	2.04	(1.24)	4.21	(2.11)	5.06	(3.10)	3.87	(2.08)
9-11 yrs.	7.61	(4.65)	4.33	(2.31)	8.95	(5.53)	5.10	(2.94)
12 yrs.	9.56	(5.86)	9.25	(4.08)	14.18	(8.99)	8.02	(3.86)
13-15 yrs.	17.36	(8.14)	7.40	(1.85)	19.70	(9.35)	5.73	(1.55)
16+ yrs.	33.22	(15.12)	34.23	(8.38)	26.23	(12.11)	29.88	(7.71)
Father's SES	0.07	(2.66)	-0.03	(0.83)	0.11	(4.23)	-0.08	(2.09)
Residence at age 15:								
Town	10.10	(7.90)	8.90	(5.09)	1.59	(1.23)	3.11	(1.88)
City	11.25	(9.09)	10.93	(6.57)	3.02	(2.41)	6.70	(4.24)
Year of first job:								
<1930	1.68	(1.31)	-2.83	(1.74)				
1935-39	1.06	(0.80)	3.90	(2.09)				
1940+	7.21	(3.94)	8.59	(3.67)				
R^2	0.23		0.22		0.44		0.47	
N	2442		1043		2442		1043	

[a]Omitted categories are less than eight years of schooling, rural residence at age 15, and first job in 1930-34.

in the constant terms, and, to a lesser extent, to differences in the estimated effects of father's occupation and year of first job. The negligible impact of schooling is particularly noteworthy in view of evidence indicating an important racial differential in the quality of available schooling prior to World War II.[9]

Occupational advancement. The third and fourth columns of Table 2 report the coefficients obtained in estimating equation (2).[10] The purpose of OCC(FIRST) on the right-hand side of the equation is to control for the impact of initial occupational level in assessing the effects on occupational change of the remaining explanatory variables. Since a finite ranking scheme is employed to index occupational titles, an inverse relationship is anticipated between first-job occupation and subsequent occupational advance. The coefficients reported in Table 2 bear out the existence of this relationship for both racial groups. Assuming a continuous formulation, the estimated relationships for blacks and whites have identical slopes with a larger intercept appearing for white men.

To allow for the possibility of a discontinuous relationship between occupational level and occupational advance, OCC(FIRST) was also specified as a categorical variable consisting of five mutually exclusive groups.[11] The results for this specification again indicate a distinct negative relationship between ΔOCC and OCC(FIRST) over the range of occupational categories considered. The shape of the relationship is quite similar for blacks and whites, while the intercept term is found to be considerably larger for whites, indicating a positive racial differential in the effects of factors not included in equation (2).

Controlling for the impact of initial occupation, the schooling coefficients shown in Table 2 indicate that educational attainment has a strong, positive impact on occupational advance. Nevertheless, the impact of successive steps in schooling is clearly less for blacks than for whites except for the highest category of schooling. As noted in connection with Table 1, however, only a small fraction of blacks in the sample either attended or completed college. Of the remaining explanatory variables, father's socioeconomic status is found to have a positive effect on ΔOCC for whites but not blacks, while community size affects occupational change positively for both racial groups. The coefficients of variation reported at the bottom of the table indicate that the model explains a surprisingly large fraction of the observed variation in ΔOCC.

Two variations of equation (2) were also explored. The first examines the effect of post-school vocational training on occupational advancement including also the effects of marital status and health status. Each of these variables has a claim to treatment as an endogenous variable because each represents an investment or an event that is likely to have occurred after the selection of a first job. For example, lack of occupational advance in the early years of a worker's career may have resulted in his enrollment in a business college program that subsequently allowed him to move to a job with higher occupational standing. In this case, vocational training had a positive effect on occupational level, but it cannot be argued that training had a causal relationship with occupational advancement. Nonetheless, vocational training represents a post-school investment in human capital that is directly measureable. As such, it is of interest to examine the relationship of vocational

training to career occupational change even if a cause and effect argument cannot be justified without access to a complete work history.[12] From a working career perspective, similarly, marital status is the result of an endogenous selection process; while the presence of a health limitation may be related to the choice of occupation as well as serving as a constraint on occupational advance.

Vocational training is measured by a set of dichotomous variables measuring completion of a training program prior to 1966. Training program are grouped by institutional source of training into the following categories: (1) business college or technical institute; (2) company training programs (of six weeks or more); (3) Armed Forces vocational training; (4) vocational, technical, and apprenticeship training; and (5) general courses. Marital status is represented by the categories married with spouse present and otherwise, while the health status variable is intended to capture the existence of a health problem that limits kind or amount of work.

Estimates of the effects of vocational training, marital status, and health status were obtained for an equation which also included OCC(FIRST), ED, and BACK. To conserve space, however, only the results for the three added variables are shown in the first two columns of Table 3. Looking first at the training categories, the expected positive relationship with occupational advancement is strongly indicated. Of equal or more importance, the coefficients estimated for black men exceed the corresponding coefficients for white men for each training category. As is true for formal schooling, nevertheless, endowments of formal training are considerably lower for blacks than for whites. This is particularly the case for company training where the absolute advantage

Table 3. Partial Regression Results for Two Variations of the Occupational Advancement Equation[a] (absolute t statistics in parentheses)

Independent Variables[a]	Variation 1				Variation 2			
	Whites		Blacks		Whites		Blacks	
Vocational training:								
Bus. coll./tech. instit.	4.21	(2.93)	5.37	(2.01)				
Co. school	4.52	(2.97)	8.79	(2.89)				
Armed forces	3.75	(2.85)	3.87	(1.77)				
Vocational/apprent.	2.51	(1.92)	4.08	(1.77)				
Gen. courses	-0.75	(0.43)	4.20	(1.38)				
Marital status	-13.27	(7.93)	-5.34	(3.55)				
Health status	-4.51	(3.81)	-3.07	(2.04)				
First industry:								
Construction					4.37	(2.27)	4.35	(1.81)
Durable mfg.					2.10	(1.17)	0.92	(0.43)
Nondurable mfg.					0.14	(0.07)	2.13	(0.78)
Pub. utilities					2.94	(1.32)	1.40	(0.46)
Wholesale					2.80	(0.87)	7.40	(1.47)
Retail					3.71	(1.96)	3.77	(1.77)
Finance/HWS					4.81	(1.71)	0.53	(0.10)
Other services					-0.45	(0.21)	4.46	(1.88)
Pub. admin.					0.77	(0.23)	5.27	(1.08)

[a]Other variables included in the regressions are OCC(FIRST), schooling, father's SES, and residence at age 15.

[b]Omitted categories are less than eight years of schooling, rural residence at age 15, no post-school vocational training, married with spouse present, no health disability, and first job in agriculture/forestry.

to blacks in the estimated effects is quite large. Health limitation and marital status other than married with spouse present have the anticipated negative signs for respondents in both racial groups.

The second variation of equation (2) draws on the contention of the dual labor market hypothesis that because of institutional and sociological barriers to mobility, whether a worker's first job is in the primary or secondary sector of the labor market shapes to a considerable degree the nature of his labor market opportunities over the rest of his working career. Furthermore, since black workers are much more likely than white workers to find their first job in the secondary sector and the existence of formal job hierarchies is an important characteristic distinguishing the primary and secondary sectors,[13] both the initial occupational level and the occupational advancement of blacks would be expected to be less than that of whites. This expectation seems to be borne out in the racial differentials in OCC(FIRST) and ΔOCC already highlighted in Table 1.

It is possible, however, to more precisely characterize workers' first jobs following the approach of the dualist writers Barry Bluestone and Howard Wachtel and Charles Betsey.[14] Bluestone and Wachtel and Betsey suggest that differences between industries in demand-side factors and capital-labor ratios serve to "balkanize" labor markets and thus capture many of the forces that restrict inter-sector mobility in the dual labor market theory. To implement this approach, a series of dummy variables representing broad industry categories were added to equation (2).[15] Because of interindustry differences in structure, each industry is expected to differ from the others in the mix of

primary sector-secondary sector jobs. On the basis of the dual hypothesis, a significant effect on occupational change for first-job industries is anticipated with the effect for blacks substantially larger than that for whites because of the added impact of racial discrimination in restricting the mobility of blacks.

Coefficients obtained for the first-industry categories are displayed in the third and fourth columns of Table 3. The individual coefficients are generally quite small in size and are typically insignificant for the members of both racial groups. A test of the hypothesis that the collective effect of the industries is zero failed to reject the null hypothesis for either the black or white equation confirming the impression left by the individual coefficeints. The evidence thus indicates that there is sufficient opportunity for advantageous job shifts between industries so that industry of first job does not typically represent either a permanent boost or a permanent impediment to the careers of blacks relative to whites.

Hourly earnings. Table 4 reports the results calculated for the third and final equation of the model. The dependent variable in the regressions reported in the first two columns is the hourly wage rate in 1966, while the natural logarithm of the wage is the dependent variable in the third and fourth columns. The key coefficients in the table are those calculated for first-job occupation and occupational change. For both blacks and whites and both specifications of the dependent variable, the coefficients attached to OCC(FIRST) and ΔOCC are positive and highly significant. The

Table 4. Hourly Wage Rate Regressions
(absolute t statistics in parentheses)

Independent Variables[a]	WAGE				log(WAGE)			
	Whites		Blacks		Whites		Blacks	
Constant	.472	(2.91)	.638	(5.87)	.261	(7.71)	-.227	(4.62)
OCC(FIRST)	.030	(13.37)	.022	(10.70)	.0081	(17.25)	.0125	(13.41)
ΔOCC	.026	(14.89)	.019	(11.82)	.0072	(20.04)	.0114	(15.43)
Schooling:								
8 yrs.	.125	(0.90)	.278	(2.84)	.060	(2.06)	.154	(3.48)
9-11 yrs.	.244	(1.57)	.157	(1.71)	.122	(4.24)	.132	(3.20)
12 yrs.	.249	(1.83)	.229	(2.08)	.159	(5.60)	.150	(3.02)
13-15 yrs.	1.050	(5.77)	.232	(1.19)	.303	(7.96)	.090	(1.03)
16+ yrs.	1.637	(8.65)	.347	(1.66)	.373	(9.44)	.014	(0.15)
Father's SES	.006	(2.59)	.001	(0.32)	.000	(0.83)	.001	(0.93)
Residence at age 15:								
Town	.283	(2.58)	.307	(3.54)	.098	(4.31)	.172	(4.38)
City	.292	(2.75)	.425	(5.08)	.147	(6.61)	.181	(4.78)
R^2	.234		.251		.325		.326	
N	2442		1043		2442		1043	

[a]Omitted categories are less than eight years of schooling and rural residence at age 15.

strong relationship between first-job level and current earnings is clearly to be expected on the argument that current position in the labor market hinges on initial position.

Given first-job occupational standing, the less apparent result is that distance of mobility up the occupational hierarchy has a significant, positive impact on workers' relative earnings. At this point, it is worth reemphasizing that the sample consists only of men in a fifteen-year age bracket so that the distribution of years of working experience is severely truncated relative to the distribution for the male population. Although career occupational advance and age are probably positively correlated in the male population, the impact of ΔOCC on earnings for men in this restricted sample clearly suggests that occupational change is capturing something more than an age effect. Thus this evidence offers an important clue as to what it is about job experience that leads to the relationship Mincer and others have discovered between experience and earnings in the cross section.

An idea of the relative influence of the continuous variables OCC(FIRST) and ΔOCC can be obtained by comparing changes in WAGE resulting from standard deviation increases in both variables. These changes are shown in the following tabulation.

Independent Variable		Standard Deviation	WAGE	log(WAGE)
Whites:	OCC(FIRST)	27.1	.81	.22
	ΔOCC	31.5	.82	.23
Blacks:	OCC(FIRST)	22.6	.50	.28
	ΔOCC	25.7	.49	.29

The rather surprising conclusion to be drawn from the tabulation is that the change in wage rates due to a standard deviation increase in occupational change is essentially the same for both racial groups as the change resulting from a standard deviation increase in initial occupational level. To see that this conclusion is not immediately obvious, consider an example of an individual who began his career as a lawyer and remained in this profession through 1966. Measured at the three-digit level, this individual's occupational change is zero so that his (relatively high) current earnings are largely explained by his (relatively high) initial occupational standing. The fact that career occupational mobility is extensive indicates that unlike the situation of the lawyer, most individuals change occupations periodically during their working lifetimes. The finding that occupational mobility has an effect on earnings as large as that of initial occupational level strongly reinforces the conclusion that progression up a job hierarchy is a critical factor in accounting for workers' relative positions in the earnings distribution.

One other aspect of the results for OCC(FIRST) and ΔOCC that should be discussed is the reversal of the sign of the racial differential in the effects of both variables moving from the absolute wage regressions to the logarithmic specification. The sign changes can be accounted for by considering the distributions of the wage variable. A much larger variance of absolute wages is observed for whites than blacks reflecting the greater positive skewness in the distribution for whites. Consequently, taking

logarithms to eliminate skewness has the effect of reducing the variance of log(WAGE) more for whites than blacks. The relatively large reduction in the variance of the white dependent variable, in turn, decreases the size of the covariance terms involving log(WAGE) to a greater extent in the normal equations for whites than blacks. The regression coefficients for the natural log transformation are therefore decreased more for whites than blacks relative to the corresponding coefficients in the WAGE regressions. The upshot is that the relative impact for whites and blacks of occupational change on wage rates hinges on the specification of the regression--at least at this stage in the analysis of on-the-job investment in training. That the impact of advancement on earnings is strong and positive, however, is unambiguous.

Holding constant the effects of OCC(FIRST) and ΔOCC, a positive relationship between schooling and wages is indicated for whites, but a well-defined relationship fails to appear for blacks. This suggests that the impact on black earnings of schooling shows up primarily via first-job occupational attainment. On the other hand, the educational endowments of whites have a direct impact on earnings as well as indirect effects via initial occupation and occupational change. Father's socioeconomic status does not appeaf to have a significant direct effect on wages for either racial group. Finally, residence at age 15 is found to have a large direct effect on the wages earned by blacks and whites some 30 to 45 years later.

IV. Conclusion

The primary purpose of this paper was to improve on the specification of job experience as measured by current age minus age at completion of formal schooling. To this end, the process of acquiring productive job skills was modeled by first focusing on the determination of the level of first-job occupation and then, given initial occupation, examining the determinants of occupational advancement. Finally, the impact of initial occupational level and occupational change on current (1966) wage rates were examined. In the empirical analysis, separate equations for middle-aged black and white men were estimated to focus on racial differences in the acquisition of labor market experience.

The most important findings of the paper include the following.

1. In determining occupation of first job, differences in endowments were found to be considerably more important than differences in coefficients in explaining the observed racial differential. Black-white differences in educational attainment were especially noteworthy.

2. With respect to occupational advancement, the effect of schooling was found to have a weaker effect for blacks than whites. This suggests that the racial differential in returns to schooling that has been reported by other researchers for samples of older workers shows up more in the occupational advancement process than in the

determination of initial occupational status.[16] The impact of first-job occupation on advancement appeared to be essentially the same for blacks and whites.

3. The regression analysis also indicated the existence of a strong relationship between occupational advance and post-school vocational training. However, industry of first job did not appear to have a significant effect on advancement for either blacks or whites.

4. Both initial occupation and occupational change were found to have positive impacts on hourly wage rates with the effects of the two variables being roughly equal. The strong showing of the occupational mobility variable in a sample of men with a relatively narrow distribution of years of job experience suggests that it is not work experience per se that influences earnings. Rather, it appears that it is work experience accompanied by progression up a job hierarchy that is the critical variable in explaining earnings inequality. Holding constant the effects of initial occupational level and occupational advancement, schooling is found to have a direct impact on the earnings of whites, while the corresponding relationship for blacks is not well defined.

NOTES

[1]Jacob Mincer, Schooling, Experience, and Earnings (New York: Columbia University Press for the NBER, 1974).

[2]Ibid., pp. 92-95.

[3]Ibid., p. 143.

[4]Ibid., p. 20.

[5]Sherwin Rosen, "Learning and Experience in the Labor Market," Journal of Human Resources 7(Summer 1972): 326-342.

[6]For a similar interpretation of occupational upgrading, see Robert J. Flanagan, "Segmented Market Theory and Racial Discrimination," Industrial Relations 7(October 1973): 270. Rosen also suggests that his model constitutes a framework for an economic theory of occupational mobility. Rosen, "Learning and Experience," pp. 327, 341.

[7]Cross-tabulations presented by Herbert Parnes and associates indicate that only about one-eighth of all respondents in this sample were working in the same three-digit occupation in which they began their careers. Using one-digit Duncan socioeconomic status scores to rank occupations, they report that almost three-fifths of the sample moved into occupations with higher socioeconomic status. Between racial groups, blacks were somewhat more likely than whites to suffer downgrading and substantially less likely to enjoy upgrading. See the paper by Herbert S. Parnes, Belton M. Fleisher, Robert C. Miljus, and Ruth S. Spitz cited in U.S., Department of Labor, Manpower Administration, The Pre-Retirement Years: A Longitudinal Study of Labor Market Experience of Men, Vol. 1, Manpower Research Monograph No. 15

prepared by the Center for Human Resource Research, Ohio State University, (Washington, D.C.: U.S. Government Printing Office, 1970), pp. 116-128 (L 1.39/3:15). Although the present analysis uses only median earnings to rank occupations, evidence presented elsewhere suggests that use of median earnings and SES scores give similar results in examining the occupational mobility observed during the late 1960s. See Duane E. Leigh, "An Analysis of the Determinants of Occupational Upgrading," 1975. This report was prepared for the Manpower Administration, U.S. Department of Labor, under research and development grant No. 91-53-74-23.

[8]The decomposition approach utilized involves asking the following question: What would be the average initial occupational standing of black men were they to enjoy access to the same occupational structure available to whites? That is, the decomposition involves weighting the racial differentials in means by white coefficients and weighting the racial differentials in coefficients by black means. For a more complete description of this approach, see Alan S. Blinder, "Wage Discrimination: Reduced Form and Structural Estimates," Journal of Human Resources 8(Fall 1973): 436-455. A table showing the results of the decomposition analysis for first-job occupation is available in an appendix that can be obtained from the author on request.

[9]Finis Welch, "Education and Racial Discrimination," in Discrimination in Labor Markets eds. Orley, Ashenfelter, and Albert Rees (Princeton: Princeton University Press, 1973), pp. 43-81.

[10]An F test applied to the categorical variable ENTRY failed to reject at the .01 level the null hypothesis of no contribution to

the explanation of occupational change. Hence, ENTRY is not included among the regressors in the ΔOCC equations shown in Table 2. Since all respondents were working in 1966, this suggests that years of work experience are not systematically related to occupational advancement for men in the 45-59 age bracket.

[11]Using 1969 median earnings to index occupations, the occupational groups are defined as follows: less than or equal to $4700 (category 1), $4800 - $6400 (category 2), $6500 - $7200 (category 3), $7300 - $8100 (category 4), and equal to or more than $8200 (category 5). These five groups are comparable to those defined for a similar purpose in Robert E. Hall and Richard A. Kasten, "The Relative Occupational Success of Blacks and Whites," Brookings Papers on Economic Activity (3: 1973), 781-797. Full regression results using this specification of OCC(FIRST) are available in the appendix mentioned in footnote 8.

[12]Recent papers by Adams and Kalachek and Raines using the Mature Men NLS sample suggest that vocational training serves as a proxy for an individual's motivation and efforts at self-improvement rather than as a productivity-enhancing investment. See the paper by A. V. Adams cited in U.S., Department of Labor, Manpower Administration, The Pre-Retirement Years: A Longitudinal Study of Labor Market Experience of Men, Vol. 1, Manpower Research Monograph No. 15 prepared by the Center for Human Resource Research, Ohio State University, (Washington, D.C.: U.S. Government Printing Office, 1970), pp. 116-128 (L 1.39/3:15/4). Edward Kalachek and Frederic Raines, "The Structure of Wage Differences Among Mature Male Workers," mimeograph. St. Louis: Washington University, August 1975.

[13]For example, David Gordon writes that "A worker's first job in the labor force, in other words, should predict the sector in which he presently works with some accuracy. . . . According to nearly every version of the theory, finally, race and sex will probably serve as fairly accurate predictors of inter-sector allocation as workers enter the market." Theories of Poverty and Unemployment (Lexington, Mass.: D.C. Heath, 1972), p. 50.

[14]Barry Bluestone, "The Characteristics of Marginal Industries," in Problems in Political Economy: An Urban Perspective ed. David M. Gordon, (Lexington, Mass.: D.C. Heath 1971), pp. 102-107. Howard M. Wachtel and Charles Betsey, "Employment at Low Wages," Review of Economics and Statistics 54(May 1972): 121-129. For a more detailed examination of the dual hypothesis, see Leigh, "Occupational Advancement in the Late 1960s: An Indirect Test of the Dual Labor Market Hypothesis," Journal of Human Resources (forthcoming).

[15]The categories include (1) agriculture, forestry, fisheries, and mining; (2) construction; (3) durable goods manufacturing; (4) nondurable goods manufacturing; (5) transportation, communications, and other public utilities; (6) wholesale trade; (7) retail trade; (8) finance, insurance, and real estate and high-wage services; (9) other services; and (10) public administration. High-wage and other services are those defined in Arthur M. Okun, "Upward Mobility in a High-pressure Economy," Brookings Papers on Economic Activity (1: 1973), 207-252. The omitted category in the regressions is agriculture/forestry.

[16]For example, see Welch, "Black-White Differences in Returns to Schooling," American Economic Review 63(December 1973): 893-907.